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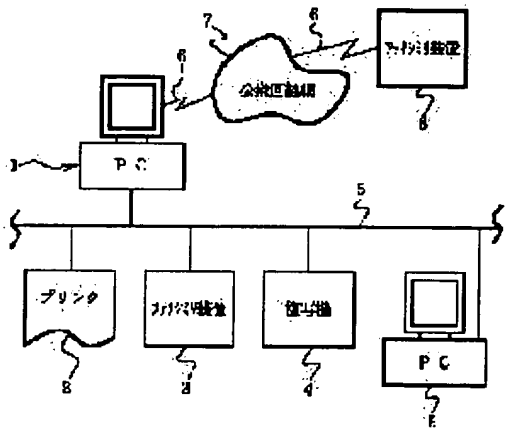
(54) REMOTE MAINTENANCE MANAGING DEVICE



(57)Abstract:

PURPOSE: To improve the efficiency of maintenance and check work for respective peripheral equipments in a system to which plural peripheral equipments are connected through a network and to reduce burden imposed on a manager.

CONSTITUTION: A PC 1 prepares maintenance managing information showing the fault conditions and use conditions of respective peripheral equipments based on an execution instructing processing for instructing the execution of self-diagnostic functions to the peripheral equipment, an analysis processing for receiving the self-diagnostic result of peripheral equipment from transmitting means respectively mounted on the peripheral equipment and analyzing those self- - diagnostic result, and the analyzed result corresponding to the self-diagnostic result. Then, electronic mail transmission processing for transmitting electronic mail, in which that maintenance managing information is described, to a PC 9 and facsimile transmission processing for preparing the maintenance managing information and transmitting that maintenance managing information to facsimile equipment 8 are executed.

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CLAIMS

[Claim(s)]
[Claim 1] It is control maintenance management equipment used for the system which has connected two or more peripheral devices which have self-checking functions, such as an airline printer, facsimile apparatus, and a copying machine, through a network. A directions means to direct activation of a self-test to each of said peripheral device through said network, A transmitting means to transmit the result of the self-test which it was carried in each of said peripheral device, and the peripheral device performed based on the directions from said directions means through said network, An analysis means to receive the result of the self-test of the peripheral device from said each transmitting means, and to analyze the result of the self-test, Control maintenance management equipment characterized by having a maintenance control information creation means to create the maintenance control information which shows the failure situation of each peripheral device, and an operating condition based on the analysis result of said analysis means.
[Claim 2] Furthermore, control maintenance management equipment according to claim 1 characterized by having a notice means to notify said maintenance control information to the maintenance control origin of said system.
[Claim 3] Said directions means, said analysis means, and said maintenance control information creation means are control maintenance management equipment according to claim 1 characterized by being carried in the terminal unit which uses said peripheral device through said network.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the control maintenance management equipment used for the system which has connected two or more peripheral devices which have self-checking functions, such as an airline printer, facsimile apparatus, and a copying machine, through a network.
[0002]
[Description of the Prior Art] Generally, the self-checking function which diagnoses the existence of generating of the failure which bars proper actuation is prepared in peripheral devices, such as an airline printer, facsimile apparatus, and a copying machine. The message which shows that the failure has occurred is displayed by the self-checking function at the time

of failure generating, and a user gets to know that the failure has occurred in the peripheral device by the display at it. The user who checked generating of a failure takes a measure for removing the failure of opposite Perilla frutescens (L.) Britton var. crispa (Thunb.) Decne. to a peripheral device. For example, if a failure is slight, the failure will be removed by the user, but if a failure is serious, a user will contact a serviceman and treatment for removing the failure by the serviceman will be performed.

[0003] In recent years, the system which has connected many peripheral devices, such as an airline printer, facsimile apparatus, and a copying machine, through a network appears, in this system, since there are many peripheral devices, the manager who manages each peripheral device is set beforehand, and the peripheral device is periodically maintained and checked by that manager. Moreover, when the user of a peripheral device checks that the failure had occurred in the peripheral device, a user notifies a manager of extent of the peripheral device which the failure generated to the manager, and its failure etc., and the manager who received the notice deals with communication to a serviceman etc. to the circumference equipment which the failure has generated.

[0004]

[Problem(s) to be Solved by the Invention] However, since the peripheral device is periodically maintained and checked by the manager in the system which has connected many peripheral devices through a network as mentioned above, the effectiveness of maintenance and check over each peripheral device is low, and the burden concerning a manager is large.

[0005] The purpose of this invention is to offer the control maintenance management equipment which can mitigate the burden concerning a manager while being able to raise the effectiveness of maintenance and check over each peripheral device in the system which has connected two or more peripheral devices through a network.

[0006]

[Means for Solving the Problem] Invention according to claim 1 is control maintenance management equipment used for the system which has connected two or more peripheral devices which have self-checking functions, such as an airline printer, facsimile apparatus, and a copying machine, through a network. A directions means to direct activation of a self-test to each of said peripheral device through said network, A transmitting means to transmit the result of the self-test which it was carried in each of said peripheral device, and the peripheral device performed based on the directions from said directions means through said network, The result of the self-test of the peripheral device from said each transmitting means is received, and it is characterized by having an analysis means to analyze the result of the self-test, and a maintenance control information creation means to create the maintenance control information which shows the failure situation of each peripheral device, and an operating condition based on the analysis result of said analysis means.

[0007] Invention according to claim 2 is characterized by having further a notice means to notify said maintenance control information to the maintenance control origin of said system in control maintenance management equipment according to claim 1.

[0008] Invention according to claim 3 is characterized by carrying said directions means, said analysis means, and said maintenance control information creation means in the terminal unit which uses said peripheral device through said network in control maintenance management equipment according to claim 1.

[0009]

[Function] In control maintenance management equipment according to claim 1, activation of a self-test is directed to each of a peripheral device through a network with a directions means. The result of the self-test which the peripheral device performed based on the directions from a directions means with the transmitting means carried in each of a peripheral device is transmitted through a network. An analysis means receives the result of the self-test of the peripheral device from each transmitting means, the result of the self-test is analyzed, and the maintenance control information which shows the failure situation of each peripheral device and an operating condition based on the analysis result of an analysis means with a maintenance control information creation means is created.
[0010] With control maintenance management equipment according to claim 2, a notice means notifies maintenance control information to the maintenance control origin of a system.
[0011] With the configuration of control maintenance management equipment according to claim 3, the directions means, the analysis means, and the maintenance control information creation means are carried in the terminal unit which uses a peripheral device through a network.
[0012]
[Example] Below, it explains, referring to drawing about the example of this invention.
[0013] (The 1st example) The block diagram in which drawing 1 shows the configuration of the network where one example of the control maintenance management equipment of this invention is used, and drawing 2 are the block diagrams showing the configuration of the personal computer which constitutes the principal part of the control maintenance management equipment of drawing 1 .
[0014] In the network system, as shown in drawing 1 , PC9 for managers which manages a terminal unit (not shown), the personal computer 1 for centralized controls (henceforth PC), and these network systems, such as a personal computer which uses each peripheral device of a printer 2, facsimile apparatus 3, and a copying machine 4 and each peripheral device through a network 5, is connected.
[0015] A transmitting means to transmit the result of the means and self-test which perform a self-checking function to each peripheral device of a printer 2, facsimile apparatus 3, and a copying machine 4 is established. The function to diagnose failure situations, such as existence of generating of a failure, and the function to manage operating conditions, such as consumption of a time and consumable goods, are included in a self-checking function, and the diagnostic result information about fault information and the management information about an operating condition are contained in the result of a self-test.
[0016] Facsimile apparatus 8 is connected to PC1 through the telephone line 6 and the public line network 7, and facsimile apparatus 8 is installed in the service center which performs check of each above-mentioned peripheral device, and repair.
[0017] PC1 is equipped with CPU10 which performs operation and processing based on the control program stored in memory 11 as shown in drawing 2 .
[0018] In the control program stored in memory 11 A system control program and the activation directions program for directing activation of a self-checking function to a circumference equipment, The program for receiving the self-test result of the peripheral device from a transmitting means carried in each of a peripheral device, It is based on the analyzer for analyzing the self-test result, and the analysis result to a self-test result. The failure situation of each peripheral device, The electronic mail transmitting program for transmitting the electronic mail with which the maintenance control information which shows an operating condition was created, and the maintenance control information was described to PC9, Said maintenance

control information is created and the facsimile transmitting program for transmitting the maintenance control information to facsimile apparatus 8 is included.

[0019] The information about maintenance of a circumference equipment is stored in memory 11 with the above-mentioned control program. As information about maintenance of this circumference equipment, the criteria operation time which needs maintenance and check is included.

[0020] A modem / NCU12, network I/F13, and external storage 14 are connected to CPU10 with memory 11 through the bus 15.

[0021] A modem / NCU12 is used at the time of facsimile transmission, and makes connection with facsimile apparatus 8 through the telephone line 6.

[0022] Network I/F13 makes connection between CPU10 and each equipment on a network 5.

[0023] The analysis result to a self-test result is stored in external storage 14.

[0024] The transmitting means formed in the control program stored in CPU10 and memory 11, a modem/NCU12, network I/F13, external storage 14, and each peripheral device constitutes the control maintenance management equipment for having two incomes mutually, and maintaining and managing each peripheral device.

[0025] Next, it explains, referring to drawing about the maintenance and management activities to each peripheral device by PC1. Drawing 3 is a flow chart which shows the procedure of the maintenance and management activities to each peripheral device by PC1 in the network system of drawing 1 .

[0026] The judgment of whether fixed time amount has passed since activation of the self-test by each last peripheral device is first performed for referring to drawing 3 (step S31). It is a judgment for this judgment to make a self-test perform periodically to each peripheral device.

[0027] If fixed time amount passes since activation of the self-test by each last peripheral device, an activation directions program will be started and activation directions of a self-test will be issued by each peripheral device through network I/F3 and a network 5 (step S32).

[0028] After activation directions of a self-test, fixed time amount maintenance of the receiving operating state is carried out so that the self-test result may be received from each peripheral device (steps S33 and S34).

[0029] If fixed time amount passes, or if the self-test result is received from each peripheral device, it will be judged whether the self-test result of the peripheral device received in fixed time amount was analyzed by the analyzer, and the slight error (failure) has occurred by it based on the analysis result of the self-test result (step S35). In addition, when the self-test result of a peripheral device is not received in fixed time amount, it is considered that the peripheral device is in the condition that the power source is not switched on. Moreover, a slight error is an error which can be returned without receiving processing by the serviceman, for example, the piece of a power source, a slip of paper, a toner piece, a jam (paper jam), etc. are said.

[0030] When the slight error has occurred, by the electronic mail transmitting program, it is changed into text information so that the information which shows ID (or name) and its contents of an error of the peripheral device which the slight error has generated can transmit by E-mail, and the text information is stored in memory 11 as maintenance control information (step S36). For example, the following contents are shown as maintenance control information stored in memory 11.

[0031] "The copying machine of a xxxx******, Inc. division is a toner piece."
"The printer of a xxxxO, Inc. OO division is a slip of paper."
After the maintenance control information which shows the name and its contents of an error of the peripheral device which the slight error has generated is stored in memory 11 when the slight error has not occurred or, it is judged whether the serious error has occurred based on the analysis result to a self-test result (step S37). In addition, a serious error is a fatal error which cannot be restored if not based on a serviceman's hand.
[0032] When the serious error has occurred, by the electronic mail transmitting program It is changed into text information so that the information which shows ID (or name) and its contents of an error of the peripheral device which the serious error has generated can transmit by E-mail. While the text information is stored in memory 11 as maintenance control information By the facsimile transmitting program, it is changed into image information so that facsimile transmission of said information by which text conversion was carried out may be possible, and the image information is stored in memory 11 as maintenance control information (step S38). For example, the maintenance control information which consists of text information or image information shows the following contents.
[0033] "The fatal error has occurred in the facsimile apparatus of a xxxx******, Inc. division."
After the maintenance control information which shows the name and its contents of an error of the peripheral device which the serious error has generated is stored in memory 11 when the serious error has not occurred or, the information about the operating condition included in a self-test result for every peripheral device is compared with the information about the maintenance stored in memory 11, and it is judged to a peripheral device whether maintenance and check are required (step S39).
[0034] It is changed into image information so that facsimile transmission of said text information may be possible by the facsimile transmitting program, while it is changed into text information so that the information which shows the name of the peripheral device which needs maintenance and check by the electronic-mail transmitting program when maintenance and check are required may transmit by E-mail, and the text information is stored in memory 11 as maintenance-control information, and the image information is stored in memory 11 as maintenance-control information (step S40). For example, text information or the maintenance control information which consists of image information shows the following contents.
[0035] "The copying machine of a xxxx******, Inc. division needs maintenance check."
After the maintenance control information which shows the name of a peripheral device maintenance and checking is stored in memory 11 when maintenance and check are not required or, the judgment of whether to have directed activation of a self-test to all the peripheral devices on a network 5 is performed (step S41). It is judged whether the serious error has occurred based on the receiving analysis result (step S37). Existence of the peripheral device with which activation of a self-test is not directed repeats the processing from step 32 that activation of a self-test should be directed to the peripheral device.
[0036] When activation directions of a self-test are completed to all peripheral devices, the judgment of whether the maintenance control information transmitted by E-mail is stored in memory 11 is performed (step S42).
[0037] When the maintenance control information transmitted by E-mail is stored in memory 11, by the electronic mail transmitting program, the maintenance control information which consists of text information is indicated by the electronic mail, and the electronic mail is transmitted to PC9 for managers through network I/F13 and a network 5 (step S43).

[0038] After transmitting maintenance control information with an electronic mail when the maintenance control information transmitted by E-mail is not stored in memory 11 or, the judgment of whether the maintenance control information which carries out facsimile transmission is stored in memory 11 is performed (step S44).
[0039] When the maintenance control information which carries out facsimile transmission is stored in memory 11, the maintenance control information which consists of image information is transmitted to the facsimile apparatus 8 of a service center by the facsimile transmitting program through a modem / NCU12, the telephone line 6, and the public line network 7 (step S45).
[0040] After carrying out facsimile transmission of the maintenance control information when the maintenance control information which carries out facsimile transmission is not stored in memory 11 or, the maintenance control information stored in memory 11 is memorized by external storage 14 (step S46).
[0041] Since it is notified to a manager or a service center by the above if needed while the maintenance control information which shows the need for generating of the error in each peripheral device on a network 5 and maintenance, and check is managed unitary with PC1, while being able to raise the effectiveness of maintenance and check over each peripheral device, the burden concerning a manager is mitigable.
[0042] Moreover, since PC1 constitutes the principal part of control maintenance management equipment, as compared with the case where control maintenance management equipment is installed independently, management to control maintenance management equipment can be made easy.
[0043] (The 2nd example) Next, it explains, referring to drawing about the 2nd example of this invention.
[0044] The configuration of this example has the same configuration as the configuration of the 1st example.
[0045] Next, it explains, referring to drawing about the maintenance and management activities to each peripheral device by PC1. Drawing 4 is a flow chart which shows the procedure of the maintenance and management activities to each peripheral device by the 2nd example of the control maintenance management equipment of this invention.
[0046] With reference to drawing 4 , the judgment of whether to have received the self-test result from each peripheral device is performed (step S51). The judgment is repeatedly performed until it receives the self-test result from a peripheral device.
[0047] If the self-test result is received from each peripheral device, it will be judged whether the self-test result of the peripheral device received in fixed time amount was analyzed by the analyzer, and the slight error (failure) has occurred by it based on the analysis result of the self-test result (step S52).
[0048] When the slight error has occurred, by the electronic mail transmitting program, it is changed into text information so that the information which shows the name (or ID) and its contents of an error of the peripheral device which the slight error has generated can transmit by E-mail, and the text information is stored in memory 11 as maintenance control information (step S53). For example, the following contents are shown as maintenance control information stored in memory 11.
[0049] "The copying machine of a xxxx******, Inc. division is a toner piece."
After the maintenance control information which shows the name and its contents of an error of the peripheral device which the slight error has generated is stored in memory 11 when the slight

error has not occurred or, it is judged whether the serious error has occurred based on the analysis result to a self-test result (step S54).

[0050] When the serious error has occurred, by the electronic mail transmitting program It is changed into text information so that the information which shows the name (or ID) and its contents of an error of the peripheral device which the serious error has generated can transmit by E-mail. While the text information is stored in memory 11 as maintenance control information By the facsimile transmitting program, it is changed into image information so that facsimile transmission of said information by which text conversion was carried out may be possible, and the image information is stored in memory 11 as maintenance control information (step S55). For example, the maintenance control information which consists of text information or image information shows the following contents.

[0051] "The fatal error has occurred in the facsimile apparatus of a xxxx******, Inc. division." After the maintenance control information which shows the name and its contents of an error of the peripheral device which the serious error has generated is stored in memory 11 when the serious error has not occurred or, it is judged whether the information which requires maintenance and check is in a self-test result for every peripheral device (step S56).

[0052] It is changed into image information so that facsimile transmission of said text information is possible by the facsimile transmitting program, while it is changed into text information so that the information which shows the name of the peripheral device which requires maintenance and check by the electronic-mail transmitting program when maintenance and check are demanded may transmit by E-mail, and the text information is stored in memory 11 as maintenance-control information, and the image information is stored in memory 11 as maintenance-control information (step S57). For example, text information or the maintenance control information which consists of image information shows the following contents.

[0053] "The copying machine of a xxxx******, Inc. division needs maintenance check." After the maintenance control information which shows the name of the peripheral device which requires maintenance and check is stored in memory 11 when maintenance and check are not demanded or, it is judged whether the cause of the error generated in the peripheral device was removed (step S58).

[0054] When the cause of the error generated in the peripheral device is removed, by the electronic mail transmitting program, it is changed into text information so that the information which shows that the name and its cause of an error of the peripheral device with which the cause of an error was removed were removed can transmit by E-mail, and the text information is stored in memory 11 as maintenance control information (step S59). For example, text information or the maintenance control information which consists of image information shows the following contents.

[0055] "The toner piece generated with the copying machine of a xxxx******, Inc. division was canceled."

After the maintenance control information which shows that the name and its cause of an error of the peripheral device with which the cause of an error was removed altogether were removed is stored in memory 11 when the cause of the error generated in the peripheral device is not removed yet or, the judgment of whether the maintenance control information transmitted with an electronic mail is stored in memory 11 is performed (step S60).

[0056] When the maintenance control information transmitted by E-mail is stored in memory 11, by the electronic mail transmitting program, the maintenance control information which consists of text information is indicated by the electronic mail, and the electronic mail is transmitted to

PC9 for managers through network I/F13 and a network 5 (step S61).
[0057] After transmitting maintenance control information with an electronic mail when the maintenance control information transmitted by E-mail is not stored in memory 11 or, the judgment of whether the maintenance control information which carries out facsimile transmission is stored in memory 11 is performed (step S62).
[0058] When the maintenance control information which carries out facsimile transmission is stored in memory 11, the maintenance control information which consists of image information is transmitted to the facsimile apparatus 8 of a service center by the facsimile transmitting program through a modem / NCU12, the telephone line 6, and the public line network 7 (step S63).
[0059] After carrying out facsimile transmission of the maintenance control information when the maintenance control information which carries out facsimile transmission is not stored in memory 11 or, the maintenance control information stored in memory 11 is memorized by external storage 14 (step S64).
[0060] Since it is notified to a manager or a service center by the above if needed while the maintenance control information which shows the demand of generating of the error in each peripheral device on a network 5 and maintenance, and check is managed unitary with PC1, while being able to raise the effectiveness of maintenance and check over each peripheral device, the burden concerning a manager is mitigable.
[0061]
[Effect of the Invention] According to control maintenance management equipment according to claim 1, activation of a self-test is directed to each of a peripheral device through a network with a directions means. The result of the self-test which the peripheral device performed based on the directions from a directions means with the transmitting means carried in each of a peripheral device is transmitted through a network. An analysis means receives the result of the self-test of the peripheral device from each transmitting means, and the result of the self-test is analyzed. Since the maintenance control information which shows the failure situation of each peripheral device and an operating condition based on the analysis result of an analysis means with a maintenance control information creation means is created, while being able to raise the effectiveness of maintenance and check over each peripheral device, the burden concerning a manager is mitigable.
[0062] Since a notice means notifies maintenance control information to the maintenance control origin of a system, while being able to raise further the effectiveness of maintenance and check over each peripheral device according to control maintenance management equipment according to claim 2, the burden concerning a manager is further mitigable.
[0063] According to control maintenance management equipment according to claim 3, since the directions means, the analysis means, and the maintenance control information creation means are carried in the terminal unit which uses a peripheral device through a network, as compared with the case where control maintenance management equipment is installed independently, management to control maintenance management equipment can be made easy.

TECHNICAL FIELD

[Industrial Application] This invention relates to the control maintenance management equipment used for the system which has connected two or more peripheral devices which have self-checking functions, such as an airline printer, facsimile apparatus, and a copying machine, through a network.

PRIOR ART

[Description of the Prior Art] Generally, the self-checking function which diagnoses the existence of generating of the failure which bars proper actuation is prepared in peripheral devices, such as an airline printer, facsimile apparatus, and a copying machine. The message which shows that the failure has occurred is displayed by the self-checking function at the time of failure generating, and a user gets to know that the failure has occurred in the peripheral device by the display at it. The user who checked generating of a failure takes a measure for removing the failure of opposite Perilla frutescens (L.) Britton var. crispa (Thunb.) Decne. to a peripheral device. For example, if a failure is slight, the failure will be removed by the user, but if a failure is serious, a user will contact a serviceman and treatment for removing the failure by the serviceman will be performed.

[0003] In recent years, the system which has connected many peripheral devices, such as an airline printer, facsimile apparatus, and a copying machine, through a network appears, in this system, since there are many peripheral devices, the manager who manages each peripheral device is set beforehand, and the peripheral device is periodically maintained and checked by that manager. Moreover, when the user of a peripheral device checks that the failure had occurred in the peripheral device, a user notifies a manager of extent of the peripheral device which the failure generated to the manager, and its failure etc., and the manager who received the notice deals with communication to a serviceman etc. to the circumference equipment which the failure has generated.

EFFECT OF THE INVENTION

[Effect of the Invention] According to control maintenance management equipment according to claim 1, mind [of a peripheral device] a network for activation of a self-test with a directions means. Direct and the result of the self-test which the peripheral device performed based on the directions from a directions means with the transmitting means carried in each of a peripheral device is transmitted through a network. An analysis means receives the result of the self-test of the peripheral device from each transmitting means, and the result of the self-test is analyzed. Since the maintenance control information which shows the failure situation of each peripheral device and an operating condition based on the analysis result of an analysis means with a maintenance control information creation means is created, while being able to raise the effectiveness of maintenance and check over each peripheral device, the burden concerning a manager is mitigable.

[0062] Since a notice means notifies maintenance control information to the maintenance control origin of a system, while being able to raise further the effectiveness of maintenance and check over each peripheral device according to control maintenance management equipment according to claim 2, the burden concerning a manager is further mitigable.
[0063] According to control maintenance management equipment according to claim 3, since the directions means, the analysis means, and the maintenance control information creation means are carried in the terminal unit which uses a peripheral device through a network, as compared with the case where control maintenance management equipment is installed independently, management to control maintenance management equipment can be made easy.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, since the peripheral device is periodically maintained and checked by the manager in the system which has connected many peripheral devices through a network as mentioned above, the effectiveness of maintenance and check over each peripheral device is low, and the burden concerning a manager is large.
[0005] The purpose of this invention is to offer the control maintenance management equipment which can mitigate the burden concerning a manager while being able to raise the effectiveness of maintenance and check over each peripheral device in the system which has connected two or more peripheral devices through a network.

MEANS

[Means for Solving the Problem] Invention according to claim 1 is characterized by the control maintenance management equipment used for the system connected through a network in two or more peripheral devices which have self-checking functions, such as an airline printer, facsimile apparatus, and a copying machine, possessing the following by this invention. A directions means to direct activation of a self-test to each of said peripheral device through said network A transmitting means to transmit the result of the self-test which it was carried in each of said peripheral device, and the peripheral device performed based on the directions from said directions means through said network An analysis means to receive the result of the self-test of the peripheral device from said each transmitting means, and to analyze the result of the self-test A maintenance control information creation means to create the maintenance control information which shows the failure situation of each peripheral device, and an operating condition based on the analysis result of said analysis means
[0007] Invention according to claim 2 is characterized by having further a notice means to notify said maintenance control information to the maintenance control origin of said system in control maintenance management equipment according to claim 1.
[0008] Invention according to claim 3 is characterized by carrying said directions means, said analysis means, and said maintenance control information creation means in the terminal unit which uses said peripheral device through said network in control maintenance management equipment according to claim 1.

OPERATION

[Function] Mind [of a peripheral device] a network for activation of a self-test with a directions means in control maintenance management equipment according to claim 1. It directs, the result of the self-test which the peripheral device performed based on the directions from a directions means with the transmitting means carried in each of a peripheral device transmits through a network, an analysis means receives the result of the self-test of the peripheral device from each transmitting means, the result of the self-test analyzes, and the maintenance-control information which shows the failure situation of each peripheral device and an operating condition based on the analysis result of an analysis means with a maintenance-control information creation means creates.

[0010] With control maintenance management equipment according to claim 2, a notice means notifies maintenance control information to the maintenance control origin of a system.

[0011] With the configuration of control maintenance management equipment according to claim 3, the directions means, the analysis means, and the maintenance control information creation means are carried in the terminal unit which uses a peripheral device through a network.

EXAMPLE

[Example] Below, it explains, referring to drawing about the example of this invention.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the configuration of the network where one example of the control maintenance management equipment of this invention is used.
[Drawing 2] It is the block diagram showing the configuration of the personal computer which constitutes the principal part of the control maintenance management equipment of drawing 1 .
[Drawing 3] It is the flow chart which shows the procedure of the maintenance and management activities to each peripheral device by PC1 in the network system of drawing 1 .
[Drawing 4] It is the flow chart which shows the procedure of the maintenance and management activities to each peripheral device by the 2nd example of the control maintenance management equipment of this invention.
[Description of Notations]
1 PC (Control Maintenance Management Equipment)
2 Printer
3 Eight Facsimile apparatus
4 Copying Machine
5 Network
6 Telephone Line
7 Public Line Network
9 PC
10 CPU
11 Memory
12 Modem/NCU
13 Network I/F
14 External Storage

REMOTE MAINTENANCE MANAGING DEVICE
Patent Number: JP8115125
Publication date: 1996-05-07
Inventor(s): KOBAYASHI HIDEYUKI
Applicant(s): CANON INC
Requested Patent: JP8115125
Application Number: JP19940275659 19941014
Priority Number(s):
IPC Classification: G05B23/02
EC Classification:
Equivalents:

Abstract

PURPOSE: To improve the efficiency of maintenance and check work for respective peripheral equipments in a system to which plural peripheral equipments are connected through a network and to reduce burden imposed on a manager.
CONSTITUTION: A PC 1 prepares maintenance managing information showing the fault conditions and use conditions of respective peripheral equipments based on an execution instructing processing for instructing the execution of self-diagnostic functions to the peripheral equipment, an analysis processing for receiving the self-diagnostic result of peripheral equipment from transmitting means respectively mounted on the peripheral equipment and analyzing those self- -diagnostic result, and the analyzed result corresponding to the self-diagnostic result. Then, electronic mail transmission processing for transmitting electronic mail, in which that maintenance managing information is described, to a PC 9 and facsimile transmission processing for preparing the maintenance managing information and transmitting that maintenance managing information to facsimile equipment 8 are executed.

[Claims]

[Claim 1] A remote maintenance management apparatus which is used for a system in which a plurality of peripheral devices having self-diagnosis function such as a printing device, a facsimile device, and a copying machine, are connected through a network, characterized by having instruction means for instructing execution of self-diagnosis to each of the peripheral devices through the network, transmission means which is mounted on each of the peripheral devices, for transmitting a result of self-diagnosis which was executed by the peripheral device on the basis of an instruction from the instruction means through the network, analysis means for receiving the result of self-diagnosis of the peripheral device from the each transmission means, and analyzing the result of self-diagnosis, and maintenance management information preparation means for preparing maintenance management information which shows a trouble status, a use status of each peripheral device on the basis of the analysis result of the analysis means.

[Claim 2] The remote maintenance management apparatus as set forth in claim 1, characterized by further having notification means for notifying the maintenance management information to a maintenance management source of the system.

[Claim 3] The remote maintenance management apparatus as set

forth in claim 1, characterized in that the instruction means, the analysis means and the maintenance management information preparation means are mounted on a terminal device which utilizes the peripheral device through the network.

[0014] In a network system, as shown in Fig. 1, each peripheral device of a printer 2, a facsimile device 3, a copying machine 4, a terminal device (not shown in the figure) such as a personal computer which utilizes each peripheral device. A personal computer (hereinafter, referred to PC) for concentrated management 1 and PC 9 for an administrator who manages this network system are connected through a network 5.

[0015] In each peripheral device of the printer 2, the facsimile device 3, the copying machine 4, disposed are means for executing a self-diagnosis function and transmission means for transmitting a result of self-diagnosis. In the self-diagnosis function, included are a function for diagnosing a trouble status such as presence or absence of occurrence of a trouble, and a function for managing a use status such as use time, an amount of consumption of a consumed material, and in the result of self-diagnosis, included are diagnosis result information regarding trouble information, and management information regarding a use status.

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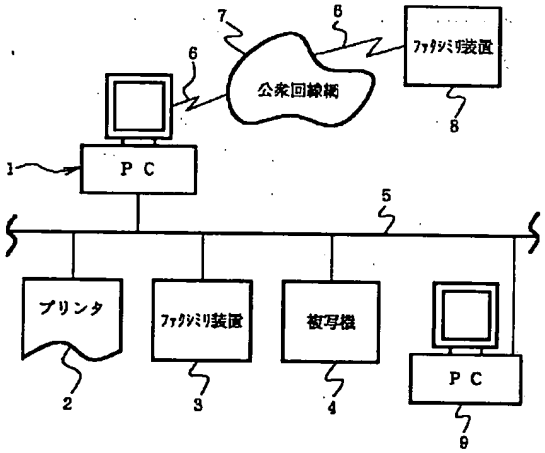
(54)【発明の名称】　遠隔保守管理装置

(57)【要約】

【目的】　複数の周辺機器をネットワークを介して接続しているシステムにおける各周辺機器に対する保守、点検作業の効率を向上させることができるとともに、管理者に掛かる負担を軽減することができる遠隔保守管理装置を提供する。

【構成】　ＰＣ１は、周辺器機に対し自己診断機能の実行を指示するための実行指示処理と、周辺機器のそれぞれに搭載された送信手段からの周辺機器の自己診断結果を受信し、その自己診断結果を解析するための解析処理と、自己診断結果に対する解析結果に基づき各周辺機器の障害状況、使用状況を示す保守管理情報を作成し、その保守管理情報が記述された電子メールをＰＣ９に送信するための電子メール送信処理と、前記保守管理情報を作成し、その保守管理情報をファクシミリ装置８に送信するためのファクシミリ送信処理とを実行する。



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【特許請求の範囲】

【請求項１】　印刷装置、ファクシミリ装置、複写機などの自己診断機能を有する複数の周辺機器をネットワークを介して接続しているシステムに用いられる遠隔保守管理装置であって、前記周辺機器のそれぞれに自己診断の実行を前記ネットワークを介して指示する指示手段と、前記周辺機器のそれぞれに搭載され、前記指示手段からの指示に基づき周辺機器が実行した自己診断の結果を前記ネットワークを介して送信する送信手段と、前記各送信手段からの周辺機器の自己診断の結果を受信し、その自己診断の結果を解析する解析手段と、前記解析手段の解析結果に基づき各周辺機器の障害状況、使用状況を示す保守管理情報を作成する保守管理情報作成手段とを備えることを特徴とする遠隔保守管理装置。

【請求項２】　さらに、前記保守管理情報を前記システムの保守管理元に通知する通知手段を備えることを特徴とする請求項１記載の遠隔保守管理装置。

【請求項３】　前記指示手段、前記解析手段および前記保守管理情報作成手段は、前記周辺機器を前記ネットワークを介して利用する端末装置に搭載されていることを特徴とする請求項１記載の遠隔保守管理装置。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、印刷装置、ファクシミリ装置、複写機などの自己診断機能を有する複数の周辺機器をネットワークを介して接続しているシステムに用いられる遠隔保守管理装置に関する。

【０００２】

【従来の技術】一般に、印刷装置、ファクシミリ装置、複写機などの周辺機器には、適正な動作を妨げる障害の発生の有無を診断する自己診断機能が設けられている。障害発生時には、障害が発生していることを示すメッセージが自己診断機能によって表示され、その表示によって利用者はその周辺機器に障害が発生していることを知る。障害の発生を確認した利用者は、周辺機器に対しその障害を取り除くための処置を施す。例えば、障害が軽度のものであれば、利用者によってその障害が取り除かれるが、障害が重度なものであれば、利用者はサービスマンに連絡し、サービスマンによってその障害を取り除くための処置が行われる。

【０００３】近年、印刷装置、ファクシミリ装置、複写機などの多数の周辺機器をネットワークを介して接続しているシステムが登場し、このシステムでは、周辺機器の数が多いことから、各周辺機器を管理する管理者が予め定められ、その管理者によって周辺機器が定期的に保守、点検されている。また、周辺機器の利用者がその周辺機器に障害が発生したことを確認したとき、利用者は管理者に障害が発生した周辺機器およびその障害の程度などを管理者に通知し、その通知を受けた管理者は障害が発生している周辺器機に対しサービスマンへの連絡などの処置を行う。

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【０００４】

【発明が解決しようとする課題】しかし、上述したように、多数の周辺機器をネットワークを介して接続しているシステムでは、管理者によって周辺機器が定期的に保守、点検されているから各周辺機器に対する保守、点検作業の効率が低く、また、管理者に掛かる負担が大きい。

【０００５】本発明の目的は、複数の周辺機器をネットワークを介して接続しているシステムにおける各周辺機器に対する保守、点検作業の効率を向上させることができるとともに、管理者に掛かる負担を軽減することができる遠隔保守管理装置を提供することにある。

【０００６】

【課題を解決するための手段】請求項１記載の発明は、印刷装置、ファクシミリ装置、複写機などの自己診断機能を有する複数の周辺機器をネットワークを介して接続しているシステムに用いられる遠隔保守管理装置であって、前記周辺機器のそれぞれに自己診断の実行を前記ネットワークを介して指示する指示手段と、前記周辺機器のそれぞれに搭載され、前記指示手段からの指示に基づき周辺機器が実行した自己診断の結果を前記ネットワークを介して送信する送信手段と、前記各送信手段からの周辺機器の自己診断の結果を受信し、その自己診断の結果を解析する解析手段と、前記解析手段の解析結果に基づき各周辺機器の障害状況、使用状況を示す保守管理情報を作成する保守管理情報作成手段とを備えることを特徴とする。

【０００７】請求項２記載の発明は、請求項１記載の遠隔保守管理装置において、さらに、前記保守管理情報を前記システムの保守管理元に通知する通知手段を備えることを特徴とする。

【０００８】請求項３記載の発明は、請求項１記載の遠隔保守管理装置において、前記指示手段、前記解析手段および前記保守管理情報作成手段は、前記周辺機器を前記ネットワークを介して利用する端末装置に搭載されていることを特徴とする。

【０００９】

【作用】請求項１記載の遠隔保守管理装置では、指示手段で周辺機器のそれぞれに自己診断の実行をネットワークを介して指示し、周辺機器のそれぞれに搭載された送信手段で指示手段からの指示に基づき周辺機器が実行した自己診断の結果をネットワークを介して送信し、解析手段で各送信手段からの周辺機器の自己診断の結果を受信し、その自己診断の結果を解析し、保守管理情報作成手段で解析手段の解析結果に基づき各周辺機器の障害状況、使用状況を示す保守管理情報を作成する。

【００１０】請求項２記載の遠隔保守管理装置では、通知手段で保守管理情報をシステムの保守管理元に通知する。

【００１１】請求項３記載の遠隔保守管理装置の構成では、指示手段、解析手段および保守管理情報作成手段が、周辺機器をネットワークを介して利用する端末装置に搭載されている。

【００１２】

【実施例】以下に、本発明の実施例について図を参照しながら説明する。

【００１３】（第１実施例）図１は本発明の遠隔保守管理装置の一実施例が用いられているネットワークの構成を示すブロック図、図２は図１の遠隔保守管理装置の主要部を構成するパーソナルコンピュータの構成を示すブロック図である。

【００１４】ネットワークシステムにおいては、図１に示すように、ネットワーク５を介してプリンタ２、ファクシミリ装置３、複写機４の各周辺機器、各周辺機器を利用するパーソナルコンピュータなどの端末装置（図示せず）、集中管理用パーソナルコンピュータ（以下、ＰＣという）１およびこのネットワークシステムを管理する管理者用ＰＣ９が接続されている。

【００１５】プリンタ２、ファクシミリ装置３、複写機４の各周辺機器には、自己診断機能を実行する手段および自己診断の結果を送信する送信手段が設けられている。自己診断機能には、障害の発生の有無などの障害状況を診断する機能と、使用時間、消費材の消費量などの使用状況を管理する機能とが含まれ、自己診断の結果には、障害情報に関する診断結果情報と、使用状況に関する管理情報とが含まれている。

【００１６】ＰＣ１には、電話回線６および公衆回線網７を介してファクシミリ装置８が接続され、ファクシミリ装置８は上述の各周辺機器の点検、修理を行うサービスセンターに設置されている。

【００１７】ＰＣ１は、図２に示すように、メモリ１１に格納されている制御プログラムに基づき演算、処理を実行するＣＰＵ１０を備える。

【００１８】メモリ１１に格納されている制御プログラムには、システム制御プログラムと、周辺器機に対し自己診断機能の実行を指示するための実行指示プログラムと、周辺機器のそれぞれに搭載された送信手段からの周辺機器の自己診断結果を受信するためのプログラムと、その自己診断結果を解析するための解析プログラムと、自己診断結果に対する解析結果に基づき各周辺機器の障害状況、使用状況を示す保守管理情報を作成し、その保守管理情報が記述された電子メールをＰＣ９に送信するための電子メール送信プログラムと、前記保守管理情報を作成し、その保守管理情報をファクシミリ装置８に送信するためのファクシミリ送信プログラムとが含まれている。

【００１９】メモリ１１には、上述の制御プログラムとともに、周辺器機の保守に関する情報が格納されている。この周辺器機の保守に関する情報としては、保守、

点検を必要とする基準稼動時間などが含まれている。

【００２０】ＣＰＵ１０には、バス１５を介してメモリ１１とともに、モデム／ＮＣＵ１２、ネットワークＩ／Ｆ１３、外部記憶装置１４が接続されている。

【００２１】モデム／ＮＣＵ１２は、ファクシミリ送信時に使用され、電話回線６を介してファクシミリ装置８との接続を行う。

【００２２】ネットワークＩ／Ｆ１３は、ＣＰＵ１０とネットワーク５上の各器機との接続を行う。

【００２３】外部記憶装置１４には、自己診断結果に対する解析結果が格納される。

【００２４】ＣＰＵ１０、メモリ１１に格納されている制御プログラム、モデム／ＮＣＵ１２、ネットワークＩ／Ｆ１３、外部記憶装置１４および各周辺機器に設けられている送信手段は、互いに共働して各周辺機器を保守、管理するための遠隔保守管理装置を構成する。

【００２５】次に、ＰＣ１による各周辺機器に対する保守、管理動作について図を参照しながら説明する。図３は図１のネットワークシステムにおけるＰＣ１による各周辺機器に対する保守、管理動作の手順を示すフローチャートである。

【００２６】図３を参照するに、まず、前回の各周辺機器による自己診断の実行から一定時間が経過したか否かの判定が行われる（ステップＳ３１）。この判定は各周辺機器に対し自己診断を定期的に行わせるための判定である。

【００２７】前回の各周辺機器による自己診断の実行から一定時間が経過すると、実行指示プログラムが起動され、自己診断の実行指示がネットワークＩ／Ｆ３およびネットワーク５を介して各周辺機器に出される（ステップＳ３２）。

【００２８】自己診断の実行指示後、各周辺機器からその自己診断結果を受信するように受信動作状態が一定時間保持される（ステップＳ３３，Ｓ３４）。

【００２９】一定時間が経過すると、または各周辺機器からその自己診断結果を受信すると、解析プログラムによって、一定時間内に受信した周辺機器の自己診断結果が解析され、その自己診断結果の解析結果に基づき軽度のエラー（障害）が発生しているか否かが判定される（ステップＳ３５）。なお、周辺機器の自己診断結果が一定時間内に受信されないとき、その周辺機器は電源が投入されていない状態であると見做される。また、軽度のエラーとは、サービスマンによる処理を受けずに復帰することが可能なエラーであり、例えば、電源の切れ、紙切れ、トナー切れ、ジャム（紙詰まり）などをいう。

【００３０】軽度のエラーが発生していると、電子メール送信プログラムによって、その軽度のエラーが発生している周辺機器のＩＤ（または名称）とそのエラー内容とを示す情報が電子メールで送信可能なようにテキスト情報に変換され、そのテキスト情報は保守管理情報とし

てメモリ１１に格納される（ステップＳ３６）。例えば、メモリ１１に格納される保守管理情報としては、以下の内容を示す。

【００３１】「××××株式会社△△△課の複写機がトナー切れです。」

「××××株式会社○○○課のプリンタが紙切れです。」

軽度のエラーが発生していないとき、または軽度のエラーが発生している周辺機器の名称およびそのエラー内容を示す保守管理情報がメモリ１１に格納された後、自己診断結果に対する解析結果に基づき重度のエラーが発生しているか否かが判定される（ステップＳ３７）。なお、重度のエラーとは、サービスマンの手によらなければ修復することができないような致命的なエラーである。

【００３２】重度のエラーが発生していると、電子メール送信プログラムによって、その重度のエラーが発生している周辺機器のＩＤ（または名称）とそのエラー内容とを示す情報が電子メールで送信可能なようにテキスト情報に変換され、そのテキスト情報は保守管理情報としてメモリ１１に格納されるとともに、ファクシミリ送信プログラムによって、前記テキスト変換された情報がファクシミリ送信可能なようにイメージ情報に変換され、そのイメージ情報は保守管理情報としてメモリ１１に格納される（ステップＳ３８）。例えば、テキスト情報またはイメージ情報からなる保守管理情報は、以下の内容を示す。

【００３３】「××××株式会社△△△課のファクシミリ装置に致命的なエラーが発生しています。」

重度のエラーが発生していないとき、または重度のエラーが発生している周辺機器の名称およびそのエラー内容を示す保守管理情報がメモリ１１に格納された後、各周辺機器毎に自己診断結果に含まれる使用状況に関する情報とメモリ１１に格納されている保守に関する情報とが比較され、周辺機器に対し保守、点検が必要であるか否かが判定される（ステップＳ３９）。

【００３４】保守、点検が必要であるとき、電子メール送信プログラムによって保守、点検を必要とする周辺機器の名称を示す情報が電子メールで送信可能なようにテキスト情報に変換され、そのテキスト情報が保守管理情報としてメモリ１１に格納されるとともに、ファクシミリ送信プログラムによって、前記テキスト情報がファクシミリ送信可能なようにイメージ情報に変換され、そのイメージ情報は保守管理情報としてメモリ１１に格納される（ステップＳ４０）。例えば、テキスト情報、またはイメージ情報からなる保守管理情報は、以下の内容を示す。

【００３５】「××××株式会社△△△課の複写機は保守点検が必要です。」

保守、点検が必要でないとき、または保守、点検が必要

な周辺機器の名称を示す保守管理情報がメモリ１１に格納された後、ネットワーク５上にある全ての周辺機器に対し自己診断の実行を指示したか否かの判定が行われる（ステップＳ４１）。をに対する解析結果に基づき重度のエラーが発生しているか否かが判定される（ステップＳ３７）。自己診断の実行が指示されていない周辺機器が存在すると、その周辺機器に対し自己診断の実行を指示すべく、ステップ３２からの処理が繰り返される。

【００３６】全ての周辺機器に対し自己診断の実行指示が終了しているとき、電子メールで送信する保守管理情報がメモリ１１に格納されているか否かの判定が行われる（ステップＳ４２）。

【００３７】電子メールで送信する保守管理情報がメモリ１１に格納されているとき、電子メール送信プログラムによって、テキスト情報からなる保守管理情報は電子メールに記載され、その電子メールはネットワークＩ／Ｆ１３およびネットワーク５を介して管理者用ＰＣ９に送信される（ステップＳ４３）。

【００３８】電子メールで送信する保守管理情報がメモリ１１に格納されていないとき、または電子メールで保守管理情報を送信した後、ファクシミリ送信する保守管理情報がメモリ１１に格納されているか否かの判定が行われる（ステップＳ４４）。

【００３９】ファクシミリ送信する保守管理情報がメモリ１１に格納されているとき、ファクシミリ送信プログラムによって、イメージ情報からなる保守管理情報はモデム／ＮＣＵ１２、電話回線６および公衆回線網７を介してサービスセンターのファクシミリ装置８に送信される（ステップＳ４５）。

【００４０】ファクシミリ送信する保守管理情報がメモリ１１に格納されていないとき、または保守管理情報をファクシミリ送信した後、メモリ１１に格納されている保守管理情報が外部記憶装置１４に記憶される（ステップＳ４６）。

【００４１】以上により、ネットワーク５上の各周辺機器におけるエラーの発生および保守、点検の必要性を示す保守管理情報がＰＣ１で一元的に管理されるとともに、必要に応じて管理者またはサービスセンターに通知されるから、各周辺機器に対する保守、点検作業の効率を向上させることができるとともに、管理者に掛かる負担を軽減することができる。

【００４２】また、ＰＣ１が遠隔保守管理装置の主要部を構成するから、遠隔保守管理装置を単独に設置する場合に比して遠隔保守管理装置に対する管理を容易にすることができる。

【００４３】（第２実施例）次に、本発明の第２実施例について図を参照しながら説明する。

【００４４】本実施例の構成は、第１実施例の構成と同じ構成を有する。

【００４５】次に、ＰＣ１による各周辺機器に対する保

守、管理動作について図を参照しながら説明する。図4は本発明の遠隔保守管理装置の第2実施例による各周辺機器に対する保守、管理動作の手順を示すフローチャートである。

【0046】図4を参照するに、各周辺機器からその自己診断結果を受信したか否かの判定が行われる（ステップS51）。その判定は周辺機器からその自己診断結果を受信するまで繰り返し行われる。

【0047】各周辺機器からその自己診断結果を受信すると、解析プログラムによって、一定時間内に受信した周辺機器の自己診断結果が解析され、その自己診断結果の解析結果に基づき軽度のエラー（障害）が発生しているか否かが判定される（ステップS52）。

【0048】軽度のエラーが発生していると、電子メール送信プログラムによって、その軽度のエラーが発生している周辺機器の名称（またはID）とそのエラー内容とを示す情報が電子メールで送信可能なようにテキスト情報に変換され、そのテキスト情報は保守管理情報としてメモリ11に格納される（ステップS53）。例えば、メモリ11に格納される保守管理情報としては、以下の内容を示す。

【0049】「××××株式会社△△△課の複写機がトナー切れです。」

軽度のエラーが発生していないとき、または軽度のエラーが発生している周辺機器の名称およびそのエラー内容を示す保守管理情報がメモリ11に格納された後、自己診断結果に対する解析結果に基づき重度のエラーが発生しているか否かが判定される（ステップS54）。

【0050】重度のエラーが発生していると、電子メール送信プログラムによって、その重度のエラーが発生している周辺機器の名称（またはID）とそのエラー内容とを示す情報が電子メールで送信可能なようにテキスト情報に変換され、そのテキスト情報は保守管理情報としてメモリ11に格納されるとともに、ファクシミリ送信プログラムによって、前記テキスト変換された情報がファクシミリ送信可能なようにイメージ情報に変換され、そのイメージ情報は保守管理情報としてメモリ11に格納される（ステップS55）。例えば、テキスト情報またはイメージ情報からなる保守管理情報は、以下の内容を示す。

【0051】「××××株式会社△△△課のファクシミリ装置に致命的なエラーが発生しています。」

重度のエラーが発生していないとき、または重度のエラーが発生している周辺機器の名称およびそのエラー内容を示す保守管理情報がメモリ11に格納された後、各周辺機器毎に自己診断結果に保守、点検を要求する情報があるか否かが判定される（ステップS56）。

【0052】保守、点検が要求されているとき、電子メール送信プログラムによって保守、点検を要求する周辺機器の名称を示す情報が電子メールで送信可能なようにテキスト情報に変換され、そのテキスト情報が保守管理情報としてメモリ11に格納されるとともに、ファクシミリ送信プログラムによって、前記テキスト情報がファクシミリ送信可能なようにイメージ情報に変換され、そのイメージ情報は保守管理情報としてメモリ11に格納される（ステップS57）。例えば、テキスト情報、またはイメージ情報からなる保守管理情報は、以下の内容を示す。

【0053】「××××株式会社△△△課の複写機は保守点検が必要です。」

保守、点検が要求されていないとき、または保守、点検を要求する周辺機器の名称を示す保守管理情報がメモリ11に格納された後、周辺機器に発生したエラーの原因が取り除かれたか否かが判定される（ステップS58）。

【0054】周辺機器に発生したエラーの原因が取り除かれたとき、電子メール送信プログラムによって、エラーの原因が取り除かれた周辺機器の名称およびそのエラー原因が取り除かれたことを示す情報が電子メールで送信可能なようにテキスト情報に変換され、そのテキスト情報が保守管理情報としてメモリ11に格納される（ステップS59）。例えば、テキスト情報、またはイメージ情報からなる保守管理情報は、以下の内容を示す。

【0055】「××××株式会社△△△課の複写機で発生したトナー切れが解消されました。」

周辺機器に発生したエラーの原因がまだ取り除かれていないとき、または全てエラーの原因が取り除かれた周辺機器の名称およびそのエラー原因が取り除かれたことを示す保守管理情報がメモリ11に格納された後、電子メールで送信する保守管理情報がメモリ11に格納されているか否かの判定が行われる（ステップS60）。

【0056】電子メールで送信する保守管理情報がメモリ11に格納されているとき、電子メール送信プログラムによって、テキスト情報からなる保守管理情報は電子メールに記載され、その電子メールはネットワークI／F13およびネットワーク5を介して管理者用PC9に送信される（ステップS61）。

【0057】電子メールで送信する保守管理情報がメモリ11に格納されていないとき、または電子メールで保守管理情報を送信した後、ファクシミリ送信する保守管理情報がメモリ11に格納されているか否かの判定が行われる（ステップS62）。

【0058】ファクシミリ送信する保守管理情報がメモリ11に格納されているとき、ファクシミリ送信プログラムによって、イメージ情報からなる保守管理情報はモデム／NCU12、電話回線6および公衆回線網7を介してサービスセンターのファクシミリ装置8に送信される（ステップS63）。

【0059】ファクシミリ送信する保守管理情報がメモリ11に格納されていないとき、または保守管理情報を

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ファクシミリ送信した後、メモリ１１に格納されている保守管理情報が外部記憶装置１４に記憶される（ステップＳ６４）。

【００６０】以上により、ネットワーク５上の各周辺機器におけるエラーの発生および保守、点検の要求を示す保守管理情報がＰＣ１で一元的に管理されるとともに、必要に応じて管理者またはサービスセンターに通知されるから、各周辺機器に対する保守、点検作業の効率を向上させることができるとともに、管理者に掛かる負担を軽減することができる。

【００６１】

【発明の効果】請求項１記載の遠隔保守管理装置によれば、指示手段で周辺機器のそれぞれに自己診断の実行をネットワークを介して指示し、周辺機器のそれぞれに搭載された送信手段で指示手段からの指示に基づき周辺機器が実行した自己診断の結果をネットワークを介して送信し、解析手段で各送信手段からの周辺機器の自己診断の結果を受信し、その自己診断の結果を解析し、保守管理情報作成手段で解析手段の解析結果に基づき各周辺機器の障害状況、使用状況を示す保守管理情報を作成するから、各周辺機器に対する保守、点検作業の効率を向上させることができるとともに、管理者に掛かる負担を軽減することができる。

【００６２】請求項２記載の遠隔保守管理装置によれば、通知手段で保守管理情報をシステムの保守管理元に通知するから、各周辺機器に対する保守、点検作業の効率をさらに高めることができるとともに、管理者に掛かる負担をさらに軽減することができる。

【００６３】請求項３記載の遠隔保守管理装置によれば、指示手段、解析手段および保守管理情報作成手段

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が、周辺機器をネットワークを介して利用する端末装置に搭載されているから、遠隔保守管理装置を単独に設置する場合に比して遠隔保守管理装置に対する管理を容易にすることができる。

【図面の簡単な説明】

【図１】本発明の遠隔保守管理装置の一実施例が用いられているネットワークの構成を示すブロック図である。

【図２】図１の遠隔保守管理装置の主要部を構成するパーソナルコンピュータの構成を示すブロック図である。

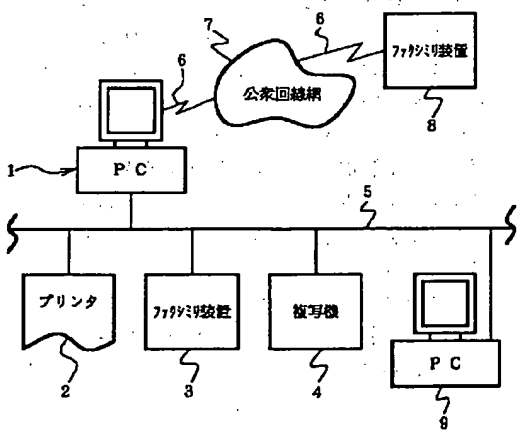
【図３】図１のネットワークシステムにおけるＰＣ１による各周辺機器に対する保守、管理動作の手順を示すフローチャートである。

【図４】本発明の遠隔保守管理装置の第２実施例による各周辺機器に対する保守、管理動作の手順を示すフローチャートである。

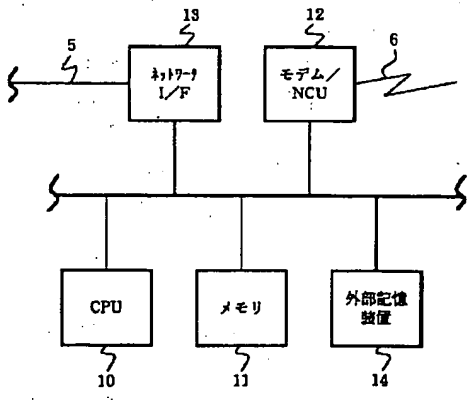
【符号の説明】

１　ＰＣ（遠隔保守管理装置）
２　プリンタ
３，８　ファクシミリ装置
４　複写機
５　ネットワーク
６　電話回線
７　公衆回線網
９　ＰＣ
１０　ＣＰＵ
１１　メモリ
１２　モデム／ＮＣＵ
１３　ネットワークＩ／Ｆ
１４　外部記憶装置

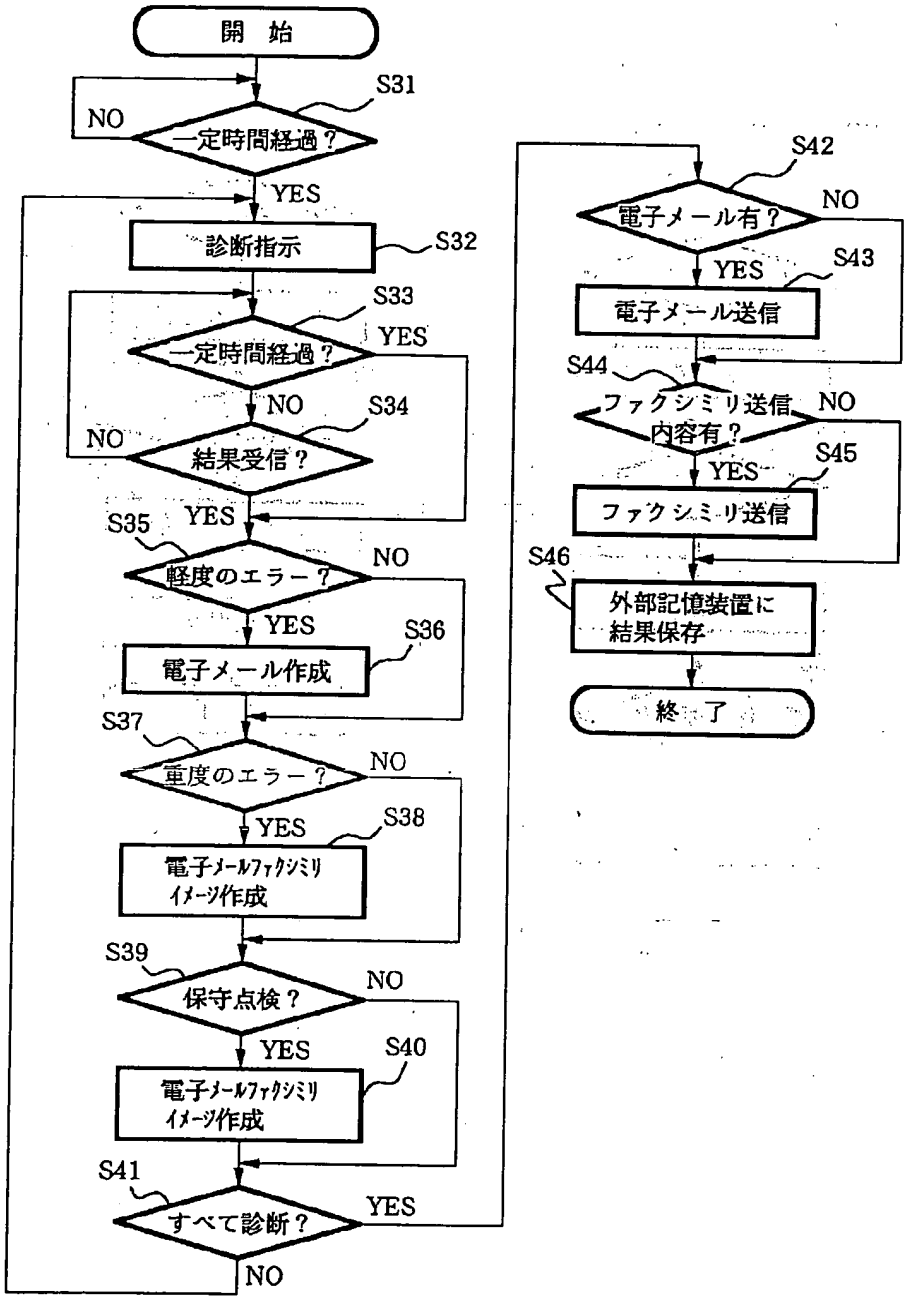
【図１】



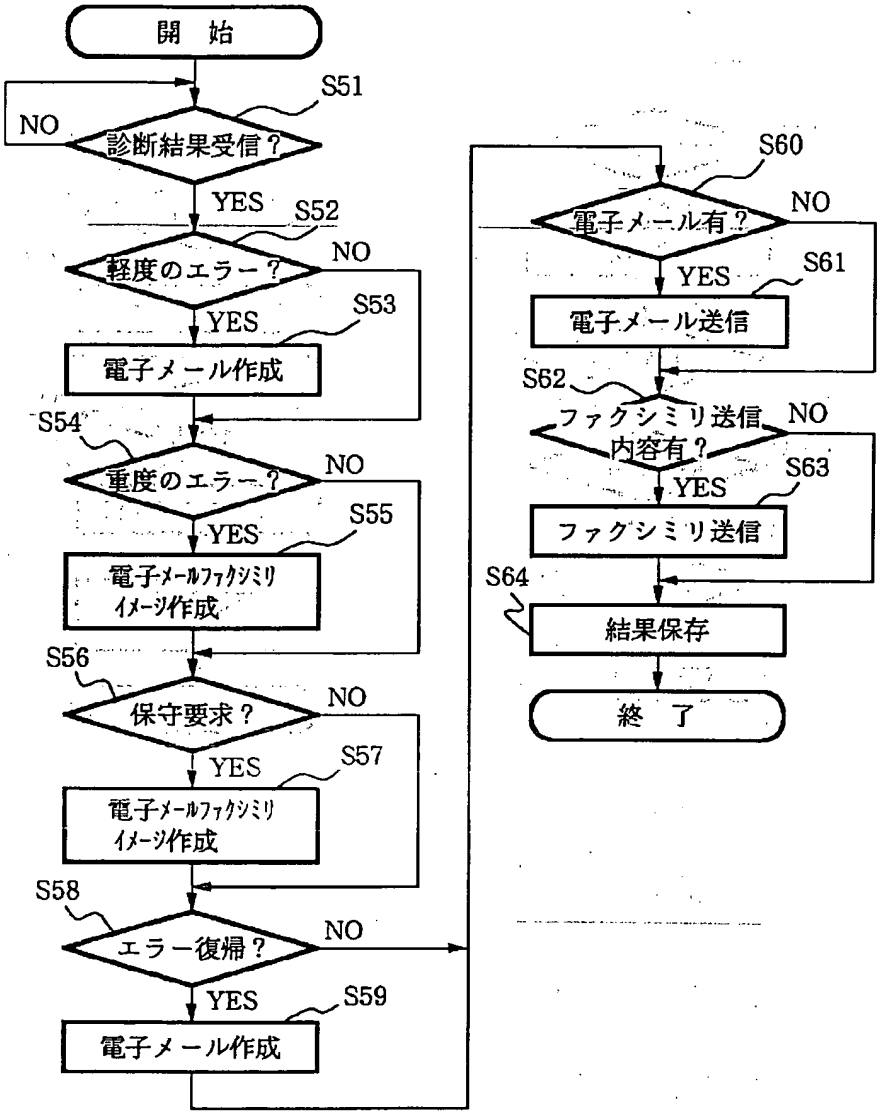
【図２】



【図３】


開　始
S31
NO
一定時間経過？
YES
診断指示
S32
S33
一定時間経過？
YES
NO
S34
NO
結果受信？
YES
S35
軽度のエラー？
NO
YES
S36
電子メール作成
S37
重度のエラー？
NO
YES
S38
電子メールファクシミリ
イメージ作成
S39
保守点検？
NO
YES
S40
電子メールファクシミリ
イメージ作成
S41
すべて診断？
YES
NO
S42
電子メール有？
NO
YES
S43
電子メール送信
S44
ファクシミリ送信
内容有？
NO
YES
S45
ファクシミリ送信
S46
外部記憶装置に
結果保存
終　了

【図４】


開　始
S51
NO
診断結果受信？
YES
S52
軽度のエラー？
NO
YES
S53
電子メール作成
S54
重度のエラー？
NO
YES
S55
電子メールファクシミリ
イメージ作成
S56
保守要求？
NO
YES
S57
電子メールファクシミリ
イメージ作成
S58
エラー復帰？
NO
YES
S59
電子メール作成
S60
電子メール有？
NO
YES
S61
電子メール送信
S62
ファクシミリ送信
内容有？
NO
YES
S63
ファクシミリ送信
S64
結果保存
終　了